

## SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

### **RULE 4605 -- AEROSPACE ASSEMBLY AND COMPONENT COATING OPERATIONS**

*(Adopted December 19, 1991; Amended May 21, 1992; Amended December 17, 1992; Amended March 31, 1993; Amended February 17, 1994; Amended December 19, 1996; Amended December 20, 2001)*

#### 1.0 Purpose

The purpose of this rule is to limit the emissions of volatile organic compounds (VOCs) from aerospace coatings and adhesives, from the organic solvent cleaning, and the storage and disposal of solvents and waste solvent materials associated with the use of aerospace coatings and adhesives and to provide the administrative requirements for recording and measuring the emissions.

#### 2.0 Applicability

This rule shall apply to the manufacturing, assembling, coating, masking, bonding, paint stripping, surface cleaning, service, and maintenance of aerospace components, the cleanup of equipment, and the storage and disposal of solvents and waste solvent materials associated with these operations.

#### 3.0 Definitions

- 3.1 Adhesion Promoter: a coating applied to a substrate in a monomolecular thickness to promote wetting and form a chemical bond with the subsequently applied material.
- 3.2 Adhesive: a substance that is used to bond one surface to another.
- 3.3 Adhesive Bonding Primer: a coating applied in a very thin film to aerospace adhesive bond detail components for corrosion inhibition and adhesion.
- 3.4 Aerosol Coating: a mixture of pigments, resins, and liquid and gaseous solvents and propellants packaged in a disposable container for hand-held application.
- 3.5 Aerospace Component: any raw material, partial or completed fabricated part, assembly of parts, or completed unit of any aircraft, helicopter, missile, or space vehicle, including mockups and prototypes.
- 3.6 Aerospace Material: any coating, primer, adhesive, sealant, maskant, lubricant, stripper or hand-wipe cleaning or clean-up solvent used during the manufacturing, assembly, refinishing, maintenance or service of an aerospace component. This definition shall be effective on and after May 1, 2003.
- 3.7 Antichafe Coating: a coating applied to areas of moving aerospace components which may rub during normal operation.

- 3.8 Anti-wicking Wire Coating: the outer coating of a wire which prevents fluid wicking into the insulation of the wire.

- 3.9 Barrier Coating: a coating applied in a thin film to fasteners to inhibit dissimilar metal corrosion and to prevent galling.
- 3.10 Brush Coating: manual application of coatings using brushes and rollers.
- 3.11 Chemical Milling: the removal of metal by chemical action of acids or alkalis.
- 3.12 Clear Topcoat: a clear or semi-transparent coating applied over a primer for purposes such as appearance, identification, or protection.
- 3.13 Coating: a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, and stains.
- 3.14 Commercial Exterior Aerodynamic Structure Primer: a primer utilized for the purpose of extended corrosion protection, which is only used on the exterior of passenger and cargo doors, supporting door structures, aerodynamic components, and structures of commercial aircraft which protrude from the fuselage, such as wings and attached components, control surfaces, horizontal stabilizer, vertical fins, wing-to-body fairings, antennae, landing gear and landing gear doors.
- 3.15 Conformal Coating: a coating applied to electrical conductors and circuit boards to protect them against electrical discharge damage and/or corrosion.
- 3.16 Decorative Laminate Primer: an adhesive bonding primer which is applied to a substrate to enhance adhesion between the decorative laminate and the subsequently applied substrate, and is cured at a maximum temperature of 250°F.
- 3.17 Dip Coating: the process in which a substrate is immersed in a solution (or dispersion) containing the coating and then withdrawn.
- 3.18 Dry Lubricative Coating: a coating consisting of lauric acid, cetyl alcohol, waxes, or other non-cross linked or resin-bound materials which act as a dry lubricant or protective coat.
- 3.19 Electric-effect Coating: an electrically-conductive coating.
- 3.20 Electrodeposition: a dip coating application method where the paint solids are given an electrical charge which is then attracted to a substrate.
- 3.21 Electronic Wire Coating: the outer electrical insulation coating applied to tape insulation of a wire specifically formulated to smooth and fill edges.
- 3.22 Electrostatic Application: a sufficient charging or atomized paint droplets to cause deposition principally by electrostatic attraction. This application shall be operated at a minimum 60 KV power.

- 3.23 Epoxy Based Fuel Tank Coating: a coating which contains epoxy resin that is applied to integral fuel tank components of aircraft to protect the fuel tank from corrosion and the by-products of bacterial growth.
- 3.24 Epoxy-Phenolic Primer: a multipolymer adhesive bonding primer which is formulated with both epoxy resin and phenolic resin and used for metal to honeycomb core bonding with a 350°F cure adhesive system.
- 3.25 Fastener Sealant: a sealant applied to a device used to join two or more parts together.
- 3.26 Fire Resistant Coating - Civilian (interior): a cabin interior coating that passes Federal Aviation Administration standards using the Ohio State University Heat Release, Fire and Burn Tests.
- 3.27 Flight Test Coating: a coating applied to an aircraft prior to flight testing to protect the aircraft from corrosion and to provide required marking during flight test evaluation.
- 3.28 Flow Coating: a coating application system where paint flows over the part and the excess coating drains back into a collection system.
- 3.29 Fuel Tank Adhesive: an adhesive used to bond components continuously exposed to fuel and which must be compatible with and used with fuel tank coatings.
- 3.30 Fuel Tank Coating: a coating applied to the interior of a fuel tank or areas of an aircraft that are continuously wetted by fuel to protect it from corrosion and/or bacterial growth.
- 3.31 Grams of VOC per Liter of Coating, Less Water and Exempt Compounds: the weight of VOC content per combined volume of VOC and coating solids and can be calculated by the following equation:

$$\begin{array}{l} \text{Grams of VOC per liter of} \\ \text{coating, less water and} \\ \text{exempt compounds} \end{array} = \frac{W_s - W_w - W_{ec}}{V_m - V_w - V_{ec}}$$

where,

$W_s$	=	weight of volatile compounds (grams)
$W_w$	=	weight of water (grams)
$W_{ec}$	=	weight of exempt compounds (grams)
$V_m$	=	volume of material (liters)
$V_w$	=	volume of water (liters)
$V_{ec}$	=	volume of exempt compounds (liters)

- 3.32 Grams of VOC per Liter of Material: the weight of VOC per volume of material and can be calculated by the following equation:

$$\text{Grams of VOC per liter of material} = \frac{W_s - W_w - W_{ec}}{V_m}$$

where,

$W_s$	=	weight of volatile compounds (grams)
$W_w$	=	weight of water (grams)
$W_{ec}$	=	weight of exempt compounds (grams)
$V_m$	=	volume of material (liters)

- 3.33 Hand Application Methods: the application of coatings, sealants, or adhesives, by nonmechanical hand-held equipment including but not limited to paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags and sponges.
- 3.34 High Temperature Coating: a coating that must withstand temperatures of more than 350°F.
- 3.35 High-Volume, Low-Pressure (HVLV) Spray Equipment: equipment used to apply materials by means of a spray gun which is designed and intended to be operated, and which is operated, between 0.1 and 10.0 psig of air atomizing pressure measured dynamically at the center of the air cap and at the air horns.
- 3.36 Impact Resistant Coating: a flexible coating that protects aerospace components, such as aircraft landing gear, and landing gear compartments, and other surfaces subject to abrasive impacts from runway debris.
- 3.37 Liquid Leak: a visible solvent leak from a container at a rate of more than three drops per minute, or a visible liquid mist.
- 3.38 Long Term Primer: an adhesive bonding primer used with a 350°F cure adhesive system for metal to honeycomb core bonding. The long term primer must provide shear values in excess of 2000 psi upon initial testing and upon 6000 hour testing. This definition shall expire on April 30, 2003.
- 3.39 Long Term Primer (Metal to Structural Core Bonding): an adhesive bonding primer that has met the aircraft manufacturers' required performance characteristics following 6000 hours testing, used for metal to structural core bonding, and with an adhesive that is specified to be cured at 350°F ± 10°F. This definition shall be effective on and after May 1, 2003.
- 3.40 Maskant for Chemical Milling: a coating applied directly to an aerospace component to protect surface areas when chemical milling such component.
- 3.41 Metal to Metal, Metal to Honeycomb Core Bonding Primer: an adhesive bonding primer used on commercial aircraft to bond a metal component to another metal component or a metal component to a honeycomb core with a 250°F cure adhesive system.

- 3.42 Military Primer: an adhesive bonding primer cured at or below 450°F for bonding either an aluminum and/or titanium part for aircraft produced for the military or any spare part used for all aircraft produced for the military with a prototype in production prior to January 1, 1997.
- 3.43 Nitrile Phenolic Primer: a multipolymer adhesive bonding primer formulated with nitrile rubber and phenolic resins used for metal to metal bonding in sonic and acoustic applications with a 350°F cure adhesive system.
- 3.44 Non-Absorbent Container: a container made of non-porous material that does not allow the migration of solvents through it.
- 3.45 Non-Leaking Container: a container without liquid leak.
- 3.46 Non-Structural Adhesive: an adhesive that bonds non-load carrying aircraft component in noncritical applications.
- 3.47 Optical Anti-Reflective Coating: a coating with a low reflectance in the infrared and visible wavelength range and is used for anti-reflection on or near optical and laser hardware.
- 3.48 Organic Solvent: the same as “Solvent.”
- 3.49 Organic Solvent Cleaning: as defined in Rule 4663 (Organic Solvent Cleaning, Storage, and Disposal).
- 3.50 Phosphate Ester Resistant Wire Ink Coating: a coating that is used for surface identification or mark on aerospace wire or cable and which inhibits the corrosion caused by contact with phosphate ester type hydraulic fluids.
- 3.51 Pretreatment Coating: a coating which contains no more than 12 percent solids by weight, and at least one-half (0.5) percent acid, by weight, to provide surface etching, and is applied directly to metal surfaces to provide corrosion resistance, adhesion and ease of stripping.
- 3.52 Primer: a coating applied directly to an aerospace component for purposes of corrosion prevention, protection from the environment, functional fluid resistance and adhesion of subsequent coatings, adhesives, or sealants.
- 3.53 Radiation-Effect Coating: a coating which helps in the prevention of radar detection.
- 3.54 Rain Erosion Resistant Coating: a coating that protects leading edges, flaps, stabilizers, and engine inlet lips against erosion caused by rain during flight.
- 3.55 Remanufactured Aircraft Part: an aerospace component that is built as a spare part or replacement part subject to an existing commercial aircraft specification. This definition shall be effective on and after May 1, 2003.

- 3.56 Roll Coating: application of coatings from a paint trough to a flat surface by mechanical series of rollers.
- 3.57 Scale Inhibitor: a coating that is applied to the surface of a part prior to thermal processing to inhibit the formation of tenacious scale.
- 3.58 Sealant: a viscous semisolid material that fills voids in order to seal out water, fuel, and other liquids and solids, and in some cases air movement, and is applied with a syringe, caulking gun, or spatula.
- 3.59 Short Term Primer (Metal to Structural Core Bonding): an adhesive bonding primer that has met the manufacturers' required performance characteristics following 1000 hours testing, used for metal to metal and metal to structural core bonding, and with an adhesive which is specified to be cured at a temperature of  $350^{\circ}\text{F} \pm 10^{\circ}\text{F}$ . This definition shall be effective on and after May 1, 2003.
- 3.60 Solid Film Lubricant: a very thin coating consisting of a binder system containing as its chief pigment material one (1) or more of the following: molybdenum disulfide, graphite, polytetrafluoroethylene (PTFE) or other solids that act as a dry lubricant between closely-fitting surfaces.
- 3.61 Solvent: as defined in Rule 4663 (Organic Solvent Cleaning, Storage, and Disposal).
- 3.62 Sonic and Acoustic Applications: the use of aerospace materials on aerospace components that are subject to mechanical vibration and/or sound wave cavitation. This definition shall be effective on and after May 1, 2003.
- 3.63 Space Vehicle Coating: a coating applied to vehicles designed to travel beyond earth's atmosphere.
- 3.64 Stripper: a volatile liquid applied to remove a maskant for chemical processing, cured or dried paint, cured or dried paint residue or temporary protective coating.
- 3.65 Structural Adhesive - Autoclavable: an adhesive used to bond load-carrying aircraft components and is cured by heat and pressure in an autoclave.
- 3.66 Structural Adhesive - Nonautoclavable: an adhesive cured under ambient conditions and is used to bond load-carrying aircraft components or other critical functions, such as nonstructural bonding near engines.
- 3.67 Surface Cleaning: any method of cleaning outside of a degreaser, including but not limited to:
- 3.67.1 Wipe cleaning.
  - 3.67.2 Equipment flushing.

- 3.68 Temporary Protective Coating: a coating applied to an aerospace component to protect it from mechanical and environmental damage during manufacturing or shipping.
- 3.69 Topcoat: a coating applied over a primer for purposes such as appearance, identification, or protection.
- 3.70 Transfer Efficiency: the ratio of the weight or volume of coating solids adhering to the part being coated to the weight or volume of coating solids used in the application process, expressed as a percentage.
- 3.71 Unicoat: a coating that is applied directly to an aerospace component for purposes of corrosion protection, environmental protection and functional fluid resistance that is not subsequently topcoated. A unicoat is used in lieu of the application of a primer and a topcoat.
- 3.72 Volatile Organic Compounds (VOCs): refer to Rule 1020 (Definitions).
- 3.73 Waste Solvent Material: any solvent which may contain dirt, oil, metal particles, sludge, and/or waste products, or wiping material containing VOCs including, but not limited to, paper, cloth, sponge, rag, or cotton swab used in organic solvent cleaning.
- 3.74 Wing Coating: a coating that is corrosion resistant and is resilient enough to withstand the flexing of wings.
- 3.75 Wire Prebonding Etchant: a nonadditive surface treatment process to provide bondability of aerospace wire coatings to the underlying insulation layer.

#### 4.0 Exemptions

- 4.1 Until January 1, 1994, the requirements of Section 5.0 of this rule shall not apply to jet engine or rocket engine gas path cleaning or flushing operations using trichloroethylene which are carried out in accordance with procedures approved by the APCO. Jet engine or rocket engine flushing operations using any solvent other than trichloroethylene shall remain exempt from this rule.
- 4.2 The requirements of Section 5.0 shall not apply to aerospace assembly and component coating operations using not more than four (4) gallons of products containing VOCs per day. Solvent-containing materials used in operations subject to Rule 4662, (Organic Solvent Degreasing Operations), shall not be included in this determination.
- 4.3 Except for the provisions of Section 6.0, Section 5.0 shall not apply to laboratories which apply coatings, solvents, and adhesives to test specimens for purpose of research, development, quality control, and testing for production-related operations. Any person claiming this exemption shall provide operational records, data and calculations, as determined by the APCO to be necessary, to substantiate this claim.



4.4 The provisions of Section 5.1 of this rule shall not apply to:

4.4.1 Coatings or aerosols with separate formulations that are used in volumes of less than one (1) gallon on any day or 20 gallons in any calendar year at an aerospace assembly and component coating stationary source, or

4.4.2 Adhesives with separate formulations that are used in volumes of less than one half (0.5) gallon on any day or ten (10) gallons in any calendar year at an aerospace assembly and component coating stationary source.

Any person seeking to claim the exemption in Section 4.4 shall notify the APCO in writing that substitute complying coatings are not available.

4.5 The provisions of Section 5.5 shall not apply to the application of coatings that:

4.5.1 Contain less than 20 grams of VOC per liter of coating less water and exempt compounds, or

4.5.2 Are dispensed from hand-held aerosol cans.

4.6 For existing stationary sources, if an incineration device is added or modified for the sole purpose of complying with the requirements of this rule, such a device shall be exempt from the Best Available Control Technology and the Offset requirements of Rule 2201 (New and Modified Stationary Source Review Rule) provided that:

4.6.1 The proposed project will not result in an increase in capacity utilization of the unit being controlled.

4.6.2 The operator demonstrates to the satisfaction of the APCO that the proposed project is environmentally beneficial and will not cause or contribute to any violation of a national ambient air quality standard (NAAQS), prevention of significant deterioration (PSD) increment, or air quality related value (AQRV) in a class I area.

## 5.0 Requirements

5.1 Aerospace Coatings and Adhesives: After the applicable effective date indicated in Table 1, no person shall apply to any aerospace component any coating, aerosol or adhesive with a VOC content, less water and exempt compounds, as applied, in excess of the limits in Table 1.

Table 1  
Limits (Grams of VOC Per Liter of Coating, Less Water and Exempt Compound)  
and Effective Dates

Product (VOC Containing Material)	5/1/00	5/1/03
Adhesion Promoter	850	850
Adhesives		
Non-Structural	250	250
Structural		
Autoclavable	50	50
Nonautoclavable	850	850
Adhesive Bonding Primers		
General	250	(1)
Decorative Laminating	800	(1)
Epoxy-Phenolic (for Metal to Honeycomb Core Bonding)	800	(1)
Long Term (for Metal to Honeycomb Core Bonding)	250	(1)
Metal to Metal, Metal to Honeycomb Core Bonding	800	(1)
Military	700	(1)
Nitrile Phenolic (for Metal to Metal)	800	(1)
New Commercial Aircraft		250 (2)
All Military Aircraft		805 (2)
Remanufactured Commercial Aircraft Parts		805 (2)
Sonic and Acoustic Applications		805 (2)
Long Term		250 (2)
Short Term		250 (2)
Antichafe Coatings	600	600
Barrier Topcoat	420	420
Clear Topcoat	520	520
Conformal Coating	750	750
Dry Lubricative Materials		
Fastener Manufacturing	120	120
Nonfastener Manufacturing	675	675
Electric/Radiation Effect Coatings	800	800
Fastener Sealants	675	675
Fire Resistant Coatings		
Civilian (Interior)	650	650
Flight Test Coatings Used on		
Missiles or Single-Use Target Craft	420	420
All others	600	600
Fuel Tank Coatings		
General	420	420
Epoxy	420	420
Fuel Tank Adhesives	620	620
High Temperature Coating	850	850
Impact Resistant Coating	420	420
Maskants - Chemical Milling	250	250

Table 1  
Limits (Grams of VOC Per Liter of Coating, Less Water and Exempt Compound)  
and Effective Dates

Product (VOC Containing Material)	5/1/00	5/1/03
Optical Anti-Reflective Coating	700	700
Pretreatment Coatings	780	780
Primers		
General	350	350
Commercial Exterior Aerodynamic Structure	350	350
Rain Erosion Resistant Coating	800	800
Scale Inhibitor	880	880
Sealant	600	600
Solid Film Lubricants		
Fastener Manufacturing	250	250
Fastener Installation	880	880
Nonfastener Manufacturing	880	880
Space Vehicle Coatings		
Electrostatic Discharge Protection	800	800
Other Space Vehicle Coatings	1000	1000
Adhesives	800	800
Temporary Protective Coatings	250	250
Topcoats	420	420
Unicoats (Self Priming Topcoats)	420	420
Wing Coating	750	750
Wire Coatings		
Electronic	420	420
Anti-Wicking	420	420
Pre-Bonding Etching	420	420
Phosphate Ester Resistant Ink	925	925

(1) These existing categories shall be replaced with new categories (2) to be effective on and after 5/1/03.

## 5.2 Evaporative Loss Minimization:

5.2.1 Surface Cleaning: No person shall use a solvent for surface cleaning, clean-up, or jet engine or rocket engine gas path cleaning or flushing, not exempt under Section 4.0 of this rule, excluding stripping coatings or cleaning coating application equipment, unless:

5.2.1.1 the solvent contains less than 200 grams of VOC per liter (1.67 lb/gal) of material, as applied; or

5.2.1.2 the VOC composite vapor pressure of the solvent is less than or equal to 45 mm Hg (0.87 psia) at a temperature of 68°F.

#### 5.2.2 Coating Application Equipment Cleaning:

Effective January 1, 1992, no person shall use materials containing VOC for the cleaning of equipment used in coating operations unless an enclosed system or enclosed gun washer is used according to the manufacturer's recommendations and is closed when not in use. Section 5.2.2 shall remain in effect through November 14, 2002.

#### 5.2.3 Coating Application Equipment Cleaning:

Effective on and after November 15, 2002, an owner or operator shall not use VOC-containing materials to clean spray equipment used for the application of coatings, adhesives, or ink, unless an enclosed system or equipment that is proven to be equally effective at controlling emissions is used for cleaning. If an enclosed system is used, it must totally enclose spray guns, cups, nozzles, bowls, and other parts during washing, rinsing and draining procedures, and it must be used according to the manufacturer's recommendations and must be closed when not in use.

- 5.3 Coating Strippers: Effective January 1, 1992, no person shall use or specify for use within the District a coating stripper unless it contains less than 300 grams of VOC per liter (2.5 lb/gal), as applied, or unless it has a VOC composite vapor pressure of 9.5 mm Hg (0.18 psia) or less at 68°F.

- 5.4 Storage and Disposal of VOC Containing Materials: An owner or operator shall store or dispose of fresh or spent solvents, waste solvent cleaning materials such as cloth, paper, etc., coatings, adhesives, catalysts, and thinners in closed, non-absorbent and non-leaking containers. The containers shall remain closed at all times except when depositing or removing the contents of the containers or when the container is empty.

- 5.5 Application Equipment Requirements: Effective January 1, 1992, no person shall apply coatings subject to the provisions of this rule unless one (1) of the following methods is used:

5.5.1 Electrostatic application;

5.5.2 Electrodeposition;

5.5.3 High-Volume, Low- Pressure (HVLP) spray,

5.5.3.1 High-Volume, Low-Pressure (HVLP) spray equipment shall be operated in accordance with the manufacturer's recommendations.

5.5.3.2 For HVLP spray guns manufactured prior to January 1, 1996, the end user shall demonstrate that the gun meets HVLP spray equipment standards. Satisfactory proof will be either in the

form of manufacturer's published technical material or by a demonstration using a certified air pressure tip gauge, measuring the air atomizing pressure dynamically at the center of the air cap and at the air horns.

5.5.3.3 A person shall not sell or offer for sale for use within the District any HVLP spray gun without a permanent marking denoting the maximum inlet air pressure in psig at which the gun will operate within the parameters specified in section 3.0.

5.5.3.4 Sections 5.5.3.1, 5.5.3.2, and 5.5.3.3 shall be effective on and after November 15, 2002;

5.5.4 Flow coating;

5.5.5 Roll coating;

5.5.6 Dip coating;

5.5.7 Brush coating.

5.6 Add-on Control Equipment Option: As an alternative to meeting the requirements of Section 5.1 or Section 5.2, a person may install pollution control equipment provided that:

5.6.1 The control device shall reduce organic emissions from an emission collection system by at least 95 percent, by weight, and

5.6.2 The control system shall capture at least 90 percent, by weight, of all the organic emissions from the source to the control device, and

5.6.3 Authority to Construct for such equipment is received from the APCO, and

5.6.4 In no case shall compliance through the use of Section 5.6 result in VOC emissions in excess of the VOC emissions which would result from compliance with Section 5.1. The minimum required control efficiency of an emission control system at which an equivalent or greater level of VOC reduction will be achieved shall be calculated by using the following equation:

$$CE = \left[ 1 - \left( \frac{VOC_{LWc}}{VOC_{LWn,Max}} \times \frac{1 - (VOC_{LWn,Max} / D_{n,Max})}{1 - (VOC_{LWc} / D_c)} \right) \right] \times 100$$

Where:

CE = Control Efficiency, percent

VOC<sub>LWc</sub> = VOC Limit, less water and exempt compounds

$VOC_{LWn,Max}$	=	Maximum VOC content of noncompliant coating used in conjunction with a control device, less water and exempt compounds
$D_{n,Max}$	=	Density of solvent, reducer, or thinner contained in the noncompliant coating, containing the maximum VOC content of the multi-component coating
$D_c$	=	Density of corresponding solvent, reducer, or thinner used in the compliant coating system.

- 5.7 Prohibition of Solicitation: After the effective date of this rule, no person shall solicit, specify or require any other person to use in the District any coating, solvent, spray equipment, or control equipment that does not meet the limits or requirements of this rule.

## 6.0 Administrative Requirements

### 6.1 Recordkeeping

- 6.1.1 Any person subject to the requirements of this rule shall have coating manufacturer's specifications, either listed on the coating container, product data sheet, or on Material Safety Data Sheets (MSDS), available for review and shall maintain daily records which show the following information as applicable:

- 6.1.1.1 manufacturer name and type for each coating, solvent, thinner, reducer or stripper used,
- 6.1.1.2 mix ratio, by volume, of components added to the original material prior to application,
- 6.1.1.3 grams of VOC per liter of each coating, solvent, thinner, reducer or stripper, less water and exempt compounds, as applied,
- 6.1.1.4 grams of VOC per liter of each solvent, thinner, reducer, or stripper,
- 6.1.1.5 volume and method of application of each coating, solvent, thinner, reducer or stripper applied, and
- 6.1.1.6 vapor pressure of solvents used.

- 6.1.2 Owners shall maintain records to support that the following coatings have been specified for their intended application.

- 6.1.2.1 adhesion promoter.
- 6.1.2.2 antichafe coating.
- 6.1.2.3 electric/radiation effect.
- 6.1.2.4 fuel tank adhesive.

- 6.1.2.5 high temperature coating.
- 6.1.2.6 impact resistant coating.
- 6.1.2.7 optical anti-reflective coating.
- 6.1.2.8 rain erosion resistant wing coating.

- 6.1.3 Any person using an add-on emission control system as a means of complying with the provisions in Section 5.6 shall maintain daily records of key system operating parameters and maintenance procedures which will demonstrate continuous operation and compliance of the emission control system during periods of emission producing activities. Key system operating parameters are those necessary to ensure compliance with VOC limits. The parameters may include, but are not limited to, temperatures, pressures, and flow rates.
- 6.1.4 Records shall be maintained for a minimum of two (2) years and shall be available for inspection by the APCO. A longer period of time for record retention may be specified by a permit condition.
- 6.1.5 Effective on and after November 15, 2002, all records shall be retained for a period of five (5) years and shall be made available for inspection by the APCO upon request.

## 6.2 Test Methods

- 6.2.1 Coating VOC content and solvent VOC content shall be determined using EPA Reference Method 24 or its constituent methods. The VOC content of coatings or solvents containing exempt compounds shall be determined by ARB Test Method 432.
- 6.2.2 The solid content of pretreatment coatings shall be determined using EPA Reference Method 24. The acid content of pretreatment coatings shall be determined using ASTM Method D1613-91.
- 6.2.3 The test method for determining the fire resistance of an interior coating shall be Federal Aviation Administration required Ohio State University Heat Release, Fire and Burn Tests.
- 6.2.4 The VOC composite vapor pressure of a blended solvent shall be determined by quantifying the amount of each organic compound in the blend using gas chromatographic analysis (ASTM 2306-81) and by calculating the VOC composite vapor pressure of the solvent by summing the product of the vapor pressure of each pure component and its molar fraction. For the purpose of this calculation, the blend shall be assumed to be an ideal solution where Raoult's Law applies. The vapor pressure of each pure component shall be obtained from published reference manuals or handbooks.
- 6.2.5 The VOC emissions from enclosed systems used to clean coating application equipment shall be determined by the manufacturer using the South Coast

Air Quality Management District General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems.

- 6.2.6 The control device efficiency of any air pollution control equipment shall be determined using EPA Methods 2, 2A, 2C, or 2D for measuring flow rates and EPA Methods 25, 25A, or 25B for measuring the total gaseous organic concentrations at the inlet and outlet of the control device. The calculation of control device efficiency shall be determined only during periods of continuous coating operations and shall be averaged over the duration of the coating operation not to exceed 24 hours.
- 6.2.7 Capture efficiency shall be determined according to EPA's technical document, "Guidelines for Determining Capture Efficiency," January 9, 1995. An equivalent alternate test method for determination of capture efficiency may be used provided it has been approved in writing by the APCO, California Air Resources Board, and the U.S. Environmental Protection Agency.



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